

REMARKS

I. Introduction

With the addition of claims 18 and 19, claims 1 to 4, 11 and 14 to 19 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejections of Claims 14 to 17 Under 35 U.S.C. § 112

Claims 14 to 17 were rejected under 35 U.S.C. § 112, second paragraph as allegedly indefinite. Applicant traverses this rejection and respectfully asserts that claims 14 to 17 are not indefinite.

The Office Action alleges that the recitation of “if the road slope points in a direction of a future travel direction of the vehicle” in claim 14 is indefinite because it is allegedly not clear if the front of the vehicle is pointed uphill or downhill. It is respectfully submitted that claim 14 fully complies with the requirements of 35 U.S.C. § 112, second paragraph, which merely requires that the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and precision, M.P.E.P. § 2173.02. It is respectfully submitted that it is unnecessary to specify whether the front of the vehicle is pointed uphill or downhill and that the language of claim 14 as presented is sufficiently clear. In view of the foregoing, withdrawal of this rejection is respectfully requested.

III. Rejection of Claims 14 to 17 Under 35 U.S.C. § 102(b)

Claims 14 to 17 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,193,332 (“Ono”). Applicant respectfully submits that Ono does not anticipate the present claims for the following reasons.

Claim 14 relates to a method for controlling a wheel brake of a vehicle. Claim 14 recites that the method includes determining a road slope and determining whether at least one of a brake pedal is depressed and a parking brake is engaged. Claim 14 has been amended herein without prejudice to recite that both the brake pedal in a depressed state and the parking brake in an engaged state produces a braking force. Claim 14 has further been amended herein without prejudice to recite maintaining the braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and

the parking brake engaged, if the road slope points in a direction of a future travel direction of a vehicle. Support for this amendment may be found, for example, at p. 7, lines 19 to 24. Claim 14 has further been amended herein without prejudice to recite monitoring for pressure losses while the braking force is maintained and compensating for the pressure losses. Support for this amendment may be found, for example, at p. 7, line 33 to p. 8, line 9. Claim 14 further recites that the method includes reducing the braking force for at least one condition.

Claim 15 relates to a method for controlling a wheel brake of a vehicle. Claim 15 recites determining a road slope, determining whether a brake pedal is depressed, and determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed. Claim 15 also recites maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Claim 16 relates to a storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle. Claim 16 recites determining a road slope and determining whether at least one of a brake pedal is depressed and a parking brake is engaged. Claim 16 has been amended herein without prejudice to recite that both the brake pedal in a depressed state and the parking brake in an engaged state produce a braking force. Claim 16 has further been amended herein without prejudice to recite maintaining the braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition. Support for this amendment may be found, for example, at p. 7, lines 19 to 24. Claim 16 has further been amended herein without prejudice to recite monitoring for pressure losses while the braking force is maintained and compensating for the pressure losses. Support for this amendment may be found, for example, at p. 7, line 33 to p. 8, line 9.

Ono purportedly relate to a vehicular brake system operating during stop. In step S101, a detection of the vehicle speed is stated to be made through

the use of the stop detecting means 1, and in a step 5102, a detection of the accelerator position is stated to be made through the accelerator detecting means 2, and further, in a step S103, a detection of the braking force is stated to be made through the brake detecting means 4. See col. 6, lines 19 to 24. The operational flow is stated next to advance to a step S104 to decide, on the basis of the accelerator position detected in the step S102, whether the accelerator is stepped on or not. See col. 6, lines 25 to 28. If not stepped on, the operational flow is stated to proceed from the step S104 to a step S105 to decide, on the basis of the vehicle speed detected in the step S101, whether or not the motor vehicle is stopped. See col. 6, lines 28 to 31. If stopped, the operational flow is stated to go from the step S105 to a step S106 to decide whether or not the braking force detected in the step S103 exceeds a predetermined value. See col. 6, lines 31 to 34. If it exceeds the predetermined value, because of satisfying the conditions that the motor vehicle is stopped, the accelerator is stated to be in the released condition and the braking force is stated to be above a predetermined braking force. See col. 6, lines 35 to 38. Step S106 is stated to be followed by a step S107, where the operation decision means 5 is stated to permit the in-stop braking operation so that the valve drive means 9 is driven to close the opening and closing valve 8. See col. 6, lines 38 to 42. When a force exceeding a given value works on the brake pedal while the motor vehicle is in stop, the stopped braking operation is stated to immediately take place. See col. 6, lines 42 to 44. Following this, if the decision of the step S104 shows that the accelerator is in the stepped-on condition, the step S104 is stated to be followed by a step S108 in which the operation decision means 5 inhibits the in-stop braking operation so that the valve drive means 9 is stopped to open the opening and closing valve 8. That is, the in-stop braking operation is stated to come to an end. See col. 7, lines 45 to 51. Furthermore, if the decision of the step S105 indicates that the motor vehicle is not in stop, or the decision of the step S106 shows that the braking force does not reach the predetermined value, the in-stop braking operation by the valve drive means 9 is stated to not be permitted, thus terminating the processing. See col. 6, lines 52 to 57.

Nowhere does Ono disclose, or even suggest, maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, **if the road slope points in a direction of a future travel direction of**

the vehicle, as recited in claims 14 to 16. Ono discloses a grade detecting means 11 to directly or indirectly detect the grade at the front and the rear portions of a motor vehicle. However, the output from the grade detecting means 11 is not used to determine whether or not to engage braking but rather for determining the “brake force needed for the vehicle to stop” variable. See col. 7, lines 23 to 31. As indicated above, when a force exceeding a given value works on the brake pedal while the motor vehicle is in stop, the stopped braking operation is stated to immediately take place. See col. 6, lines 42 to 44. The grade detecting means 11 is thus used to determine the level of the “force exceeding a given value.”

Further, nowhere does Ono disclose, or even suggest, monitoring for braking pressure losses while the braking force is maintained and compensating for the braking pressure losses, as recited in claims 14 and 16, as amended. Ono does not address pressure losses post the initial pressure buildup by the brake operating system.

Further, in regard to claims 15 and 17, Ono also does not disclose, or even suggest, determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed. Ono does not disclose determining whether a parking brake is depressed before engaging the in-stop brake system, let alone the specifics of checking for parking brake engagement if the brake pedal is not depressed. To the contrary, Ono discloses that when the transmission is in the parking position, which is typically when the parking brake is used, it is unnecessary to even operate the in-stop braking operation. See col. 18, lines 29 to 32.

Therefore, for all the foregoing reasons, Ono does not disclose, or even suggest, all of the limitations of claims 14 to 17

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As more fully set forth above, it is respectfully submitted that Ono does not disclose, or even suggest, maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state

with one of the brake pedal depressed and the parking brake engaged, **if the road slope points in a direction of a future travel direction of the vehicle**, as recited in claims 14 to 16, or determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed, as recited in claims 15 and 17. It is therefore respectfully submitted that Ono does not anticipate claims 14 to 17. Withdrawal of the present rejection is therefore respectfully requested.

IV. Rejection of Claims 14 and 16 Under 35 U.S.C. § 102(b)

Claims 14 and 16 have been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 6,199,964 ("Ota et al."). Applicant respectfully submits that Ota et al. do not anticipate claims 14 and 16 for the following reasons.

Ota et al. purportedly relate to a braking control system for controlling a braking force applied to each wheel of a vehicle. A steep slope detector GD is stated to be provided for determining whether the vehicle is on a steep slope, when the rear end of the vehicle is located downward. See col. 5, lines 63 to 65. The wheel speeds of rear wheels RR, RL are stated to be held to be zero by a stop holding device SH when the steep slope detector GD determines that the vehicle is on the steep hill, with the rear end of the vehicle located downward, and a braking operation sensor BD is stated to detect the depression of the brake pedal BP, with the rear end of the vehicle located downward, when it is determined that the wheel speeds of front wheels FR, FL are zero and that the wheel speeds of the rear wheels RR, RL are not zero. See col. 5, line 65 to col. 6, line 9. The stop holding device SH is stated to be adapted to supply the hydraulic braking pressure discharged from an auxiliary pressure source AS to the rear wheel brake cylinders RR, RL. See col. 5, line 67 to col. 6, line 2. The hydraulic braking pressure in the rear wheel brake cylinders Wrr, Wrl is stated to be decreased by a stop cancellation device RH in response to the operating conditions of the brake pedal BP, when the vehicle is moved after the wheel speeds of the rear wheels RR, RL became zero. See col. 6, lines 9 to 15.

Nowhere do Ota et al. disclose, or even suggest, maintaining the braking force at a wheel, produced by the depressed brake pedal or an engaged parking brake, independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the

vehicle, as recited in amended claims 14 and 16. As indicated above, Ota states that the stop holding device SH is stated to be adapted to supply the hydraulic braking pressure discharged from an auxiliary pressure source AS to the rear wheel brake cylinders RR, RL. Therefore, the stop holding device SH supplies additional braking force to the rear wheels and does not **maintain** the braking force produced by the depressed brake pedal or engaged parking brake.

Further, nowhere do Ota et al. disclose, or even suggest, monitoring for braking pressure losses while the braking force is maintained and compensating for the braking pressure losses, as recited in claims 14 and 16, as amended. Ota et al. do not address pressure losses post the initial pressure buildup by the braking control system. Withdrawal of the present rejection is therefore respectfully requested.

V. Rejection of Claims 1 to 4, 11, 14 to 17 Under 35 U.S.C. § 103(a)

Claims 1 to 4, 11 and 14 to 17 have been rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 6,086,515 ("Buschmann et al.") and U.S. Patent No. 4,717,207 ("Kubota et al."). Applicant respectfully submits that the combination of Buschmann et al. and Kubota et al. does not render obvious the present claims for the following reasons.

Claim 1 relates to a method for controlling a wheel brake of a vehicle. Claim 1 recites determining a road slope, determining whether a brake pedal is depressed and whether a parking brake is engaged, maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Claim 11 relates to a storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit a method for controlling a wheel brake of a vehicle. Claim 11 recites determining a road slope, determining whether a brake pedal is depressed and whether a parking brake is engaged, maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake

engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

Claims 1, 11, 14 and 16 have been amended herein without prejudice to recite monitoring for pressure losses while the braking force is maintained and compensating for the pressure losses. Support for this amendment may be found, for example, at p. 7, line 33 to p. 8, line 9.

Claim 17 relates to a storage medium for storing at least one computer program, wherein the at least one stored computer program is operable for executing in a computing unit for controlling a wheel brake of a vehicle. Claim 17 recites determining a road slope, determining whether a brake pedal is depressed and determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed. Claim 17 also recites maintaining a braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle, and reducing the braking force for at least one condition.

The Office Action admits that Buschmann et al. use wheel speed as an indicator of road slope and fail to disclose determining a road slope. The Office Action alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the slope sensor allegedly taught by Kubota et al. in a Buschmann et al. hill holder in order to allow for braking only when the front of the vehicle points uphill, i.e., to prevent roll back.

Buschmann et al. purportedly relate to a process and system for retaining a vehicle on an inclined roadway. Kubota et al. purport to relate to a booster unit for moving a vehicle on a slope in a method of controlling the same.

In regard to claims 1, 11, 14 and 16, nowhere does the combination of Buschmann et al. and Kubota et al. disclose, or even suggest, monitoring for pressure losses while the braking force is maintained and compensating for the pressure losses. Neither Buschmann et al. nor Kubota et al. address pressure losses post the initial pressure buildup by the hill holder.

In regard to claims 15 and 17, nowhere does the combination of Buschmann et al. and Kubota et al. disclose, or even suggest, determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed.

Neither Buschmann et al. nor Kubota et al. condition a check of the parking brake upon the brake pedal not being depressed.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As stated above, the combination of Buschmann et al. and Kubota et al. do not disclose, or even suggest, monitoring for pressure losses while the braking force is maintained and compensating for the pressure losses, as recited in claims 1, 11, 14 and 16, or determining whether a parking brake is engaged if it is determined that the brake pedal is not depressed, as recited in claims 15 and 17. Therefore, the combination of Buschmann et al. and Kubota et al. does not render claims 1, 11 and 14 to 17 obvious. Therefore, withdrawal of this rejection is respectfully requested.

Claims 2 to 4 depend from claim 1 and therefore include all of the limitations of claim 1. As more fully set forth above, it is respectfully submitted that the combination of Buschmann et al. and Kubota et al. does not disclose, or even suggest, all of the limitations of claim 1, from which claims 2 to 4 depend. Therefore, it is respectfully submitted that the combination of Buschmann et al. and Kubota et al. does not render unpatentable these dependent claims for at least the same reasons provided above in support of the patentability of claim 1. In re Fine, 837 F.2d 1071 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

VI. New Claims 18 and 19

New claims 18 and 19 have been added herein. It is respectfully submitted that new claims 18 and 19 do not add any new matter and are fully

supported by the present application, including the Specification. It is respectfully submitted that none of the references disclose determining whether the vehicle has come to a complete stop and maintaining the braking force at a wheel independently of an extent of a brake pedal actuation, in at least one operating state with one of the brake pedal depressed and the parking brake engaged, if the road slope points in a direction of a future travel direction of the vehicle and if the vehicle is at a complete stop. As indicated above, Ota states that the wheel speeds of rear wheels RR, RL are stated to be held to be zero by a stop holding device SH when, *inter alia*, it is determined that the wheel speeds of front wheels FR, FL are zero and that the wheel speeds of the rear wheels RR, RL are not zero. See col. 5, line 65 to col. 6, line 9.

VII. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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